

REMARKS

Upon entry of this amendment, claims 55-68 are all the claims pending in the application. Claims 65-68 have been added as new claims. No new matter has been added. Applicant notes that new claims 65-68 correspond to the elected invention.

I. Claim Rejections under 35 U.S.C. § 102

The Examiner has rejected claims 55-64 under 35 U.S.C. § 102(b) as being anticipated by Watson (U.S. 5,765,923).

Claim 55, as amended, recites the features of a first pressure wave deforming means to promote localized cracking or fracture of a rock surface in a locality of the first pressure wave deforming means and which is exposed to a pressure wave generated by initiating the propellant; and a second pressure wave deforming means to promote localized cracking or fracture of a rock surface in a locality of the second pressure wave deforming means and which is exposed to the pressure wave generated by initiating the propellant. Applicant respectfully submits that Watson does not disclose or suggest such a combination of features.

Regarding Watson, Applicant notes that this reference discloses a cartridge 25 that is used for fracturing rock (see Fig. 3). The cartridge 25 is provided with a base 24, a separation disk 29, and a front end 27 (see Fig. 3; col. 9, lines 19-21; and col. 9, lines 35-38).

As shown in Fig. 3 of Watson, the separation disk 29 holds a main propellant load 30 separate from the internal air space 31 contained in the front end 27 of the cartridge, and is designed to rupture or disintegrate when the propellant load 30 is burned so that the cartridge front end 27 is exposed to the high pressure gases (see col. 9, lines 40-42 and col. 9, lines 65-67).

As explained in Watson, after the separation disk 29 ruptures or disintegrates, thereby exposing the cartridge front end 27 to the high pressure gases, rupture grooves 32 that are provided in the cartridge front end 27 facilitate the rupture of the cartridge front end 27 (see col. 10, lines 21-24).

Regarding the rupturing of the cartridge 25 of Watson, Applicant notes that the cartridge 25 is designed to rupture only at the front end 27 (see col. 10, lines 21-27). In this regard, Applicant notes that Watson explicitly discloses at col. 10, lines 24-27, that the rupture grooves 32 “ensure that the cartridge ruptures at the front end and not elsewhere along the cartridge body such as the location near where the cartridge body 25 enters the cartridge base 24” (emphasis added)

As noted above, claim 55 has been amended to recite the features of a first pressure wave deforming means to promote localized cracking or fracture of a rock surface in a locality of the first pressure wave deforming means and which is exposed to a pressure wave generated by initiating the propellant; and a second pressure wave deforming means to promote localized cracking or fracture of a rock surface in a locality of the second pressure wave deforming means and which is exposed to the pressure wave generated by initiating the propellant.

In the Office Action, the Examiner has taken the position that the separation disk 29 of Watson corresponds to the “first pressure wave deforming means” and that the cartridge base 24 of Watson corresponds to the “second pressure wave deforming means”.

First, regarding the separation disk 29 of Watson, Applicant submits that while this element is used to separate the propellant 30 from the front end 27 of the cartridge (see col. 9, lines 40-42), that the separation disk 29 itself is in no way whatsoever responsible for promoting

localized cracking or fracture of a rock surface, as recited in claim 55. In this regard, as described above, Applicant notes that Watson discloses that the separation disk 29 merely ruptures or disintegrates when the propellant is burned (see col. 9, lines 65-37).

As such, Applicant respectfully submits that the separation disk 29 of Watson clearly does not correspond to a first pressure wave deforming means to promote localized cracking or fracture of a rock surface in a locality of the first pressure wave deforming means, as recited in amended claim 55.

Second, regarding the cartridge base 24 (which the Examiner indicated corresponds to the "second pressure wave deforming means"), Watson explicitly discloses that the cartridge does not rupture near the cartridge base 24, but instead, ruptures only at the front end 27 of the cartridge (see col. 10, lines 21-27).

As such, Applicant respectfully submits that the cartridge base 24 of Watson clearly does not correspond to a second pressure wave deforming means to promote localized cracking or fracture of a rock surface in a locality of the second pressure wave deforming means, as recited in amended claim 55.

In view of the foregoing, Applicant respectfully submits that Watson does not disclose, suggest or otherwise render obvious at least the above-noted combination of features recited in claim 55. Accordingly, Applicant submits that claim 55 is patentable over Watson, an indication of which is kindly requested.

Claims 56-63 depend from claim 55 and are therefore considered patentable at least by virtue of their dependency.

In addition, regarding claim 60, Applicant notes that this claim recites that the member that is made from a material which has a density greater than the density of the propellant is turned into a high pressure jet by action of the propellant when it is ignited. Regarding the "member" as recited in claim 60, Applicant notes that this member is part of the second pressure wave deforming means (see claim 59, from which claim 60 depends).

In the Office Action, the Examiner has taken the position that the separation disk 29 of Watson corresponds to the "member" as recited in claim 60 (see page 3 of the Office Action). Applicant notes, however, that the Examiner has taken the position in the Office Action that the separation disk 29 of Watson corresponds to the first pressure wave deforming means, not the second pressure wave deforming means (see page 2 of the Office Action).

Thus, because the Examiner has indicated in the Office Action that the separation disk 29 of Watson corresponds to the first pressure wave deforming means, Applicant submits that the Examiner's reliance on the separation disk 29 of Watson as corresponding to the "member" of claim 60 is incorrect because the "member" of claim 60 is part of the second pressure wave deforming means (see claim 59), not the first pressure wave deforming means.

In view of the foregoing, Applicant respectfully submits that claim 60 is patentable over Watson, an indication of which is kindly requested.

Regarding claim 61, Applicant notes that this claim recites that an explosive, which acts directly on the member that is made from a material which has a density greater than the density of the propellant, is used to generate a high pressure jet of the material. Similar to the discussion above with respect to claim 60, Applicant notes that the "member" of claim 61 is part of the second pressure wave deforming means (see claim 59, from which claim 61 depends).

In the Office Action, the Examiner has again taken the position that the separation disk 29 corresponds to the "member" as recited in claim 61. For at least the same reasons as discussed above with respect to claim 60, Applicant submits that the separation disk 29 of Watson cannot correspond to the "member" of claim 61.

In view of the foregoing, Applicant respectfully submits that claim 61 is patentable over Watson, an indication of which is kindly requested.

Regarding claim 62, Applicant notes that this claim recites the feature of a control unit which is operable to initiate the propellant at a first predetermined time and to detonate the explosive at a second predetermined time.

In the Office Action, Applicant notes that the Examiner has taken the position that the propellant 30 of Watson corresponds to both of the "propellant" and the "explosive" as recited in claim 62 (see Office Action at pages 2 and 3). Applicant respectfully submits that such a position is improper.

In particular, Applicant notes that the propellant and the explosive are clearly claimed as separate elements in the claimed invention (see claims 55 and 62), wherein claim 62 sets forth that the propellant is initiated at a first predetermined time and the explosive is detonated at a second predetermined time. Based on the above-noted limitations set forth in the claims, Applicant submits that it is clearly improper for the Examiner to equate a single element (i.e., the propellant 30) of Watson to both of the "propellant" and the "explosive" as recited in the claims.

In view of the foregoing, Applicant respectfully submits that claim 62 is patentable over Watson, an indication of which is kindly requested.

Regarding claim 64, Applicant notes that this claim has been amended to recite the features of a first pressure wave deforming means to promote localized cracking or fracture of a rock surface in a locality of the first pressure wave deforming means and which is exposed to a pressure wave generated by initiating the first propellant; and a second pressure wave deforming means to promote localized cracking or fracture of a rock surface in a locality of the second pressure wave deforming means and which is exposed to a pressure wave generated by initiating the second propellant.

As noted above, the Examiner has taken the position that the separation disk 29 of Watson corresponds to the "first pressure wave deforming means" and that the cartridge base 24 of Watson corresponds to the "second pressure wave deforming means".

As discussed above, however, in Watson, the separation disk 29 merely ruptures or disintegrates when the propellant is burned. In addition, the cartridge 25 of Watson is designed to rupture only at the front end 27, wherein Watson explicitly discloses that the cartridge does not rupture near the cartridge base 24.

As such, Applicant respectfully submits that Watson does not disclose, suggest or otherwise render obvious at least the above-noted combination of features recited in claim 64 of a first pressure wave deforming means to promote localized cracking or fracture of a rock surface in a locality of the first pressure wave deforming means and which is exposed to a pressure wave generated by initiating the first propellant; and a second pressure wave deforming means to promote localized cracking or fracture of a rock surface in a locality of the second pressure wave deforming means and which is exposed to a pressure wave generated by initiating the second propellant.

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In view of the foregoing, Applicant respectfully submits that claim 64 is patentable over Watson, an indication of which is kindly requested.

II. New Claims

Claims 65-68 have been added as new claims. Claims 65 and 66 depend from claim 64, and claims 67 and 68 depend from claim 55. Accordingly, Applicant submits that claims 65-68 are patentable at least by virtue of their dependency.

III. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may best be resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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